THE SPECIFIC DIFFERENCES BETWEEN *APANTESIS NAIS* DRURY, *A. VITTATA* FABR. AND *A. PHALERATA* HARRIS.

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W. J. Holland in the "Moth Book," p. 132, expressed doubts whether the three forms, including *A. vittata f. radians* Walker, are really distinct. The latter view is held by J. B. Smith (Insects of New Jersey, p. 441) who says, speaking of these three species: "With good bred material at hand the differences are obvious." Without being able to look up the literature on this subject at present, I wish to report on a few observations made which tend to show that at least two of these species are distinct. During my stay at the Bussey Institution in Forest Hills, Mass., during the summer of 1915, I was permitted, through the kindness of Prof. W. M. Wheeler, to obtain lepidopterous material from the moth-trap of the Institution. Eggs were obtained of *A. nais* and *A. phalerata*, that is of two species identical in appearance with specimens preserved under these names at the Boston Museum of Natural History. Of *A. nais* eight different broods were raised. All descendants gave typical *nais:* males and females with yellow hind wings (never red!), with black costal border of the fore wings, and in the males without any black spots on the white collar band, while of the females, about half the number had such spots present. Of *A. phalerata* one brood was raised. All the descendants were typical *phalerata:* males with pale, yellowish-pink hind wings, often less spotted as compared with *A. nais;* females with bright coral-red hind wings; both sexes with white costal border and with two black spots on the white collar band above the head; no yellow specimens. Numerous attempts were made to obtain hybrids of the two species but all in vain: the two species do not interbreed. No difficulty was encountered in obtaining offspring within the same species. A second generation was raised before fall of both *A. nais* and *A. phalerata*. No difference in the appearance of the second generation was seen as compared with the first generation. Hence I conclude that the two species are certainly distinct.

Of *Apantesis vittata* only males were found, hence this species

could not be bred. The fact that none of the broods of *nais* and *phalerata* gave any specimens of the type of *vittata*, seems to show, that *vittata* represents a third, entirely distinct, species. In *vittata* both yellow and red specimens are found in both sexes. The black spots on the hind wings as well as on the fore wings tend to fuse together. Extremes of such forms seem to correspond with *A. radians* Walker. The costal border is always white which serves to separate the yellow specimens from *A. nais*, and the white collar band is always without black spots which serves to separate the red specimens from *A. phalerata*. The size is slightly above that of *A. nais*, on the average.

On the suggestion of Dr. Henry Skinner I compared the male genital claspers of several individuals of the three species spoken of. It was found that in fact *A. nais* and *A. phalerata* differ widely in the structure of these claspers, and it is not unlikely that copulation would be mechanically impossible. The genitalia of *A. vittata* are however very similar to those of *A. nais*, and it would be of interest to attempt hybridization of these two species.

The fact that Holland's abundant material came mostly from one and the same locality "one little ravine in western Pennsylvania," does certainly not imply that it was all of the same species. No less than eight different species of *Apantesis*, including the above spoken of, were found in the immediate neighborhood of the Bussey Institution, attracted to light, and fairly abundant. Most of these are certainly less variable than often supposed to be the case in this genus.